

REMARKS**Summary of the Office Action**

Claims 1 and 3 stand rejected under 35 U.S.C. § 103(a) as being obvious over WO 00/65584 and further considered with either JP 10-320835 or U.S. Patent No. 6,130,871 to Watabe (hereinafter "Watabe").

Claims 5 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the art as applied to claims 1 and 3 above, and further in view of U.S. Patent No. 5,708,651 to Sugaya et al. (hereinafter "Sugaya").

Summary of the Response to the Office Action

Applicants have amended independent claim 1 to differently describe an embodiment of the disclosure of the instant application. Accordingly, claims 1, 3, 5, and 7 remain pending for consideration.

Rejections under 35 U.S.C. § 103(a)

Claims 1 and 3 stand rejected under 35 U.S.C. § 103(a) as being obvious over WO 00/65584 and further considered with either Japanese Patent Kokai No. 10-320835 or Watabe. Claims 5 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the art as applied to claims 1 and 3 above, and further in view of Sugaya. Applicants have amended independent claim 1 to differently describe an embodiment of the disclosure of the instant application. To the extent that these rejections might be deemed to apply to the claims as newly-amended, they are respectfully traversed as follows.

Applicants respectfully submit that the WO 00/65584 disclosure relates to an optical disk having a recording capacity “of about at least 15GB.” See the Abstract, for example. Regarding the taper angle of pits, Applicants respectfully submit that this reference only discloses that the taper angle θ generally falls within a range of approximately 40 to 80 degrees. See, for example, lines 60-61 of column 4 of U.S. 6,512,735 which is cited by the Office Action as a counterpart of WO 00/65584. Applicants respectfully submit that this arrangement is clearly different from the range of the taper angle defined in the last paragraph of newly-amended independent claim 1. In particular, claim 1 has been newly-amended to recite an optical disc including a specific combination of features including a feature that “a taper angle of said pits in a direction tangential to the array of the pits is in a range of 80 degrees to 90 degrees.”

Moreover, Applicants respectfully submit that the first of the alternatively-applied secondary references, Japanese Patent Kokai No. 10-320835, discloses a phase-change type optical disk that executes land/groove recording. At the end portion of Abstract of this secondary reference, a description is provided that the tapered angle of the wall of groove is set ≥ 60 degrees, ≥ 80 degrees or ≥ 84 degrees. However, Applicants respectfully submit that there is a clear difference between embodiments of the disclosure of the instant application, as recited in independent claim 1, and the disclosure of this secondary reference, as will now be discussed in detail.

Embodiments of the disclosure of the instant application contemplate an optical disk which is able to suppress gain fluctuations of a tracking error detection signal according to a phase-difference method. As recited in newly-amended independent claim 1, the taper angle of the pits in a tangential direction of the array of the pits (e.g., the track) is in a range of 80 degrees

to 90 degrees. This feature is typically illustrated in Figs. 8A and 8B of the present application. In these figures, both the taper angle in the direction tangential to the array of the pits and the taper angle in the disk's radial direction are shown to have the same value θ . However, Applicants respectfully submit that this is shown as an example only, and the taper angles in the tangential direction and the taper angle in the radial direction are provided independently from each other and each of these taper angles performs respective functionalities.

As described in the introductory part of the description of the present application, the present invention aims to provide an optical disk which can suppress the gain fluctuation of the phase difference tracking error detection signal. Generally speaking, the phase difference tracking error detection signal is largely affected by the physical shape of the pit in the time base direction, namely the direction tangential to the track (the array of the pits). On the other hand, the phase difference tracking error detection signal is less affected by the physical shape of the pits in the radial direction.

In connection with the objective of the present invention mentioned above, the physical shape of the pit in the time base direction is more dominant than that in the radial direction when considering their respective effects on the phase difference tracking error signal.

With regard to the first of the applied secondary references (Japanese Patent Kokai No. 10-320835), Applicants respectfully submit that although a tapered angle higher than 80 degrees is discussed, that particular angle pertains to the tapered angle of the wall of groove. See, for example, the description at end of the Abstract of this secondary reference. As a result, Applicants respectfully submit that this secondary reference only discloses the selection of the value of the tapered angle in the radial direction.

In light of this particular difference, Applicants respectfully submit that this feature of the disclosure of the instant application, as recited in newly-amended claim 1, and its associated effect of suppressing the fluctuation of the gain of the phase difference tracking error signal, are neither taught nor suggested in the cited references, so that the rejection of claim 1 under 35 U.S.C. section 103(a) over WO 00/65584 in view of Japanese Patent Kokai No. 10-320835 cannot be maintained. Moreover, the alternatively-applied secondary reference to Watabe does not cure the deficiencies of WO/65584 and Japanese Patent Kokai No. 10-320835 in this regard for at least the following reasons.

Applicants respectfully submit that Watabe discloses an optical disk apparatus and optical disc of the "DVD" format. Accordingly, Applicants submit that that the disclosure of Watabe cannot be combined with the optical disk disclosure of the primary reference WO/65584 because of particular differences in optical parameters between the optical disks of these respective disclosures, such as reproduction wavelength and numerical aperture (NA) of the objective lens. One having ordinary skill in the art would thus not be motivated to combine the disclosures of these respective references in the manner contemplated by the Office Action.

Along these lines, in the disk apparatus of Watabe, the wavelength of the light beam to reproduce the information is 685 nanometers and the numerical aperture of the objective lens is 0.6. See col. 5, line 58 of Watabe. Applicants respectfully submit that these values (adopted for the DVD format disclosure of Watabe) are significantly different from those described in independent claim 1 of the present application. For example, independent claim 1 recites a "wavelength ranging from 400 nm to 415 nm" and a "numerical aperture ranging from 0.75 to 0.86."

As discussed in the introductory part of the description of the present application, the wave front aberration increases as the wavelength of the light beam decreases. Similarly, the wave front aberration increases as the numerical aperture NA increases.

Thus, Applicants respectfully submit that optical parameters (such as the wavelength and the numerical aperture) associated with the optical disk according to embodiments of the disclosure of the instant application lead to a larger wave front aberration than the optical parameters for a DVD (such as that disclosed in Watabe), resulting in a larger gain fluctuation of the tracking error detection signal.

Applicants respectfully submit that embodiments of the disclosure of the instant application are intended to suppress the gain fluctuation of a phase difference tracking error signal even in light of optical parameters which would increase the gain fluctuation in the manner discussed previously.

Accordingly, as described above, the optical parameters disclosed in Watabe are different from those associated embodiments of the disclosure of the instant application, as recited in independent claim 1. As a result, Applicants respectfully submit that one having ordinary skill in the art would not be led to simply combine the Office Action's asserted portions of the disclosure of Watabe to the asserted portions of the optical disk disclosure of WO 00/65584. Accordingly, the alternatively-applied rejection of claim 1 under 35 U.S.C. section 103(a) over WO 00/65584 in view of Watabe should also be withdrawn for at least the foregoing reasons.

Accordingly, Applicants respectfully assert that the rejections of independent claim 1 under 35 U.S.C. § 103(a) should be withdrawn because none of WO 00/65584, Japanese Patent Kokai No. 10-320835 or Watabe, whether taken singly or combined, teach or suggest each

feature of independent claim 1, as amended. MPEP § 2143.03 instructs that “[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974).” Furthermore, Applicants respectfully assert that dependent claims 3, 5 and 7 are allowable at least because of their dependence from claim 1 and the reasons set forth above, and because the additionally applied reference to Sugaya with regard to claims 5 and 7, does not cure the deficiencies of the art as applied to claims 1 and 3, as discussed above.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request the entry of the Amendments to place the application in clear condition for allowance or, in the alternative, in better form for appeal. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants’ undersigned representative to expedite prosecution.

Except for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including

any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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Dated: August 2, 2005

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